VOL. IV. OCTOBER, 1898. No. 10.

The Forester

A monthly magazine, devoted to the care and use of forests and forest trees and related subjects . . . . . .

FIRE IN PRIEST RIVER FOREST RESERVE, IDAHO.

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THE AMERICAN FORESTRY ASSOCIATION.

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The object of this Association is to promote:

1. A more rational and conservative treatment of the forest resources of this continent.
2. The advancement of educational, legislative and other measures tending to promote this object.
3. The diffusion of knowledge regarding the conservation, management and renewal of forests, the methods of reforestation of waste lands, the proper utilization of forest products, the planting of trees for ornament, and cognate subjects of arboriculture.

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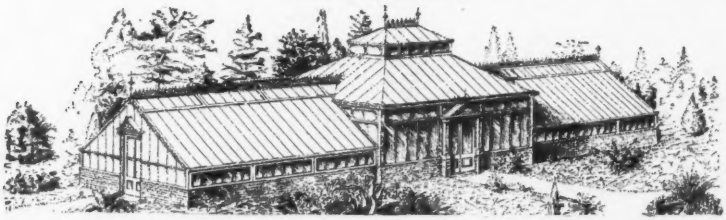

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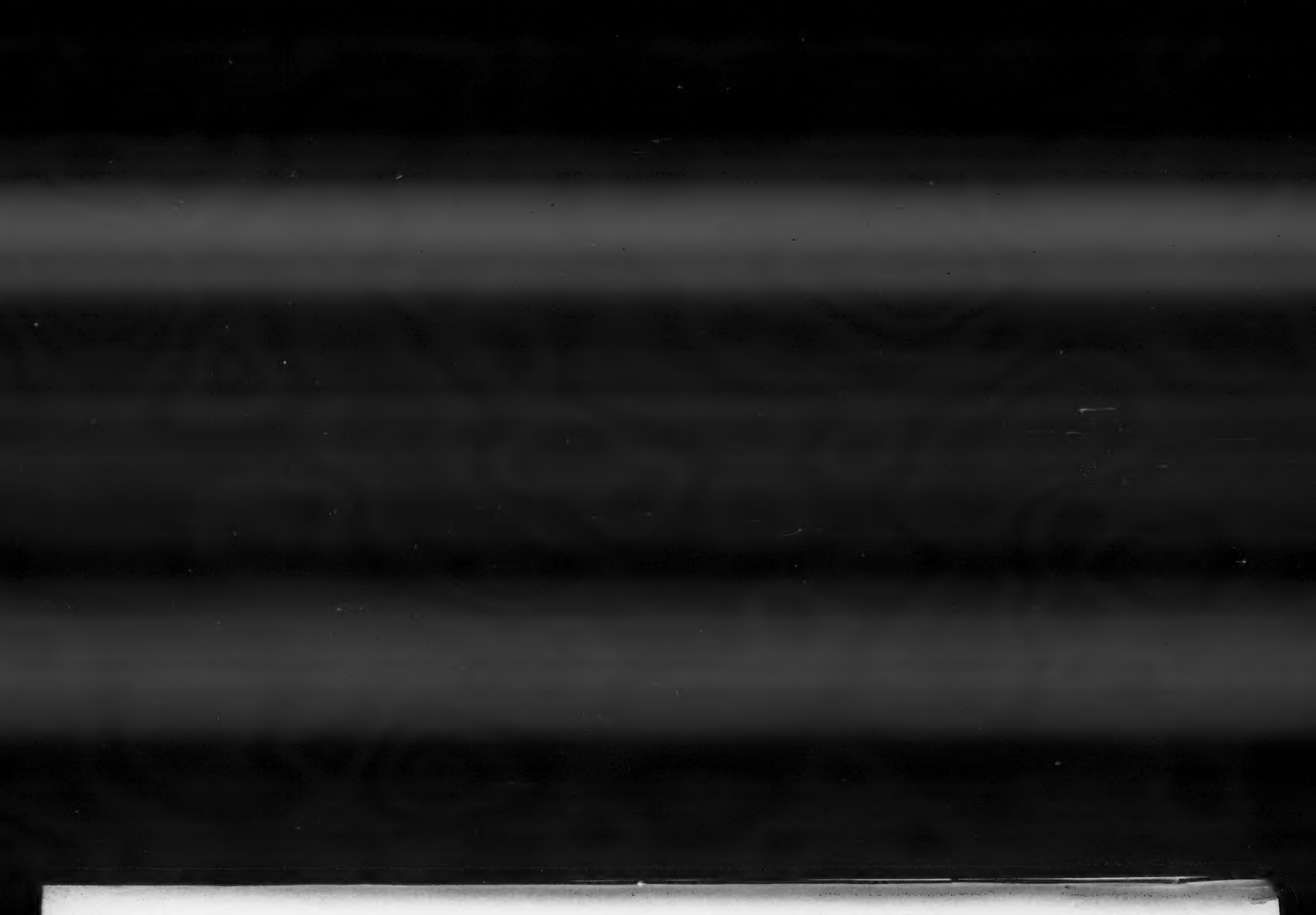

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[We are fortunately able to present to our readers in this issue more of the valuable papers read at the recent Boston meeting of the Association. They merit the most careful attention as, by common consent, this year's meeting was of unusual interest. A greater activity in the forestry cause is evidently assured.—ED.]

The Next Move in Favor of Forestry in Michigan.

W. J. BEAL.

Michigan, the State composed of two peninsulas in the midst of the Great Lakes of North America, was, in its primitive condition, especially well clothed with a magnificent growth of trees. We all know the results. Much of the timber was soon cut and burned or cut into timber and used or sold. Fire has destroyed much mature timber and very much more that was young and full of promise for the future.

Lumbermen and most other business men were continually proclaiming, "There is no cause for alarm; the forests of Michigan are inexhaustible. Let us pay no attention to the warnings of a few old fogies who say that we ought to begin to conserve our young trees and let them grow for future use."

As time passed there was a considerable change taking place in the mind of man regarding the endurance of the supply.

In the House of Representatives for 1887 was a member by the name of N. A. Beecher, who sounded the alarm and prepared a bill looking toward a reform in forestry. His bill became a law, and carried with it the munificent (?) sum of one thousand dollars, which was to pay all expenses for two years. The State Board of Agriculture, whose chief duties are to look after the Agricultural College, were, by the law, made an independent forestry commission, and this commission appointed two directors who were to serve without salary. The names of these directors were Hon. C. W. Garfield and W. J. Beal. Mr. Garfield is a public-spirited man and full of enthusiasm in seeking for better methods of forest management; but he was not endowed with a fortune of his own, hence could not afford to devote a very large portion of his time gratuitously for the good of the State. Besides, during these two years the condition of his health was such that it would not permit him to engage in any severe physical or mental labor. The other director was employed at a salary as a professor in the Agricultural College, where the position as teacher and worker in the Experiment Station claimed his time during most of the year, including the summer months. There was no money with which to pay a capable person who

should enter the forests and make observations and experiments. A single report for 1888 was published, containing a number of pages, prepared by one of the directors and giving an account of one convention.

At the same time, California had a commission with $80,000 at its disposal, and it made an excellent report. With this in mind, the directors in a prefatory note of their report were constrained to say, "It is prepared by men whose time is occupied quite fully with other duties, and should not be compared with the more elaborate treatises issued by other States at large expense, and which contain the researches of experts employed for a long time on small divisions of the general subject." However, if we judge by the time expended and the cost of the report to the State and the comments of experts in several different States, the people of Michigan were amply rewarded for the small appropriation they made.

The work was a new thing for the State, and only a few heard much about it. In spite of reported statements to the contrary, there was a feeling prevalent among lumbermen that the work of a commission was adverse to the cutting and using mature trees.

After two years, in 1889, another legislature convened. You will readily understand that neither of the two men who had gratuitously snatched a little time from other duties for two years, were ready to spend very much time at the capitol engineering votes to secure another small appropriation to be managed by themselves. Still an effort was made for the good of the cause, but no appropriation secured. Again, after two years more, the nature of the membership was such that it was utterly hopeless to attempt to secure a cent of money for work on the subject of forestry. As a mark of economy and disapproval, they repealed the odious act and apparently believed they had done a fine thing. This was in 1891. In the meanwhile, especially since 1891, timber has continued to disappear by the woodman's saw and by fire, and a number of other States, nearby and remote, were violently agitating the subject and really beginning to do something. I will not go into details, you know them as well as I, and better. Besides, the head of the Forestry Division of the United States Department of Agriculture was persistently striking heavy blows for a reform. The people of Michigan read some and talked some and kept on thinking.

Within three to four years past, the one who now speaks to you has presented the needs of Michigan forests at numerous conventions of farmers in thirty counties of the State, and at nearly all of these institutes resolutions were adopted praying for an efficient forestry commission. But when a legislature is about to meet, some of these same farmers apparently forget the resolutions they voted to sustain and urge that expenses be cut down to the lowest possible notch, and urge that the session be restricted to a very short time, regardless of the way it affects legislation. At the last winter's session, two bills on the subject of forestry were presented and considered, but failed to pass because they were crowded out for lack of time. Again, apparently little goes through unless it it is backed up and urged by persons who are especially interested. There was no strong lobby on hand to work in the interest of forestry, perhaps because there was no one there seeking a job. I may not represent the matter fairly, but I am making a diligent effort to tell the truth as I understand it.

During all this time the fire in Michigan had been smoldering, but had not gone entirely out.

Early in 1898 a change occurred which augurs well for the immediate future.

Whenever and wherever the subject has been seriously and fairly presented, there has been great unanimity in favor of trying to unite and do something toward a reform. The press of the State is in favor of it. With these facts before them, a volunteer movement was inaugurated somewhat as follows:

The regents who manage the State

University and the State Board of Agriculture who manage the Agricultural College joined hands and each body selected two of its members and each a member of the respective faculties, six men in all, to attempt to perfect plans for legislation the approaching winter at a regular biennial session of the lawmakers. This committee has held two meetings and has united with itself the Commissioner of the State Land Office, and requested the State Board of Education to select two of their number to join in these preparations for aggressive work. The State Board of Education includes the State Superintendent of Public Instruction and three other men who act with him in managing the State Normal School. Several subcommittees have been appointed who will strive to have the subject mentioned favorably in the platforms of political parties at their State conventions. They will solicit a notice in the inaugural address of the incoming Governor, and try to induce the Superintendent of Public Instruction to speak on the subject at a meeting of the State Teachers' Association. In like manner, efforts are to be made to gain the approval of the State Grange, the State Association of Farmers' Clubs, the State Horticultural Society and the State Agricultural Society. An effort will be made to have the subject suitably represented at each of the one hundred and fifty Farmers' Institutes, and a bulletin will be prepared by the State Experiment Station, setting forth the need for action. Candidates for the legislature are to be approached on this subject and a bill will be ready to be pushed for passage. In all of these efforts we can appeal to State pride, by pointing the people to the good work already well under way in New York, Pennsylvania, New Jersey, Massachusetts, Maine, Wisconsin, Minnesota, California and other States. By combined earnest efforts and taking advantage of the experience of neighboring States, Michigan hopes yet to be able to make amends for inactivity in the past.

The Need of Forestry Experiment Stations.

WILLIAM R. LAZENBY,
Ohio State University, Columbus, Ohio.

I suppose there are few who have failed to realize in some measure at least the important part played by forest trees in the economy of nature. Yet the question as to the general effect of trees upon soil, climate, and our economic condition as a nation, is one that has not always presented itself to our minds as demanding a practical solution.

To clear the land for building sites, roads and farms, has been accepted as a necessity.

In the early history of our country forest trees were obstacles to be overcome—enemies to be annihilated.

Having by rugged toil and painful effort subdued the forests it seems like turning a short corner to begin to urge the replanting of what cost so much time and labor to remove. And yet to preserve the proper balance of nature the one is now as necessary as the other once was.

I am not troubled with any mawkish sentiment regarding the cutting down of trees. Usefulness should be the end, and utility the reason for promoting all vegetable growth, whether it be the herb of the field or the monarch of the forest.

Although I believe trees should exist for use, I take a genuine hearty pleasure in seeing them grow. I never look upon a fine, wide-spreading, high-reaching, well developed tree but what I feel like taking off my hat and saying with all oriental courtesy, and more than oriental sincerity, "may your shadow never grow less." To keep the shadow from growing less we should see to it that two or more trees are planted for every one cut down. I am interested in the planting of trees, in the preservation, improvement and extension of forests, because I believe it is our duty as the inheritors of a great trust to preserve our inheritance for those who are to come after us.

Do we ever fully realize what an in-

heritance we have in our climate, and in our soil and the products that grow thereon? Probably there is no place in the world where so great a variety of products for the comfort, convenience and welfare of mankind can be grown successfully as in the Central and Eastern United States. When we consider the number and nature of the different varieties of grains, grasses, fruits, vegetables, shrubs and trees that can be surely and thriftily grown over a large part of our Union, we are forced to admit that the possibilities of our soil and climate are equal if not greater than any other portion of the earth's surface of like area.

Are we guarding this inheritance as we should? Are we not squandering it by the reckless destruction of our forests? Take my own State of Ohio, one of the best agricultural States in the Union—a great stock, grain, milk-producing, fruit-growing, truck-farming commonwealth; a State centrally located and one wherein land can be cultivated as profitably as almost anywhere else; yet I am satisfied that from one-fifth to one-quarter of its area may be more advantageously devoted to timber than to any other crop.

Probably no State in the Union was supplied by nature with a more varied and generous covering of timber than Ohio. For more than a hundred years this magnificent forest area has been yielding to the demands of agriculture, manufacture and commerce until only a small percentage remains.

Considered from a strictly utilitarian point of view the necessity for prompt and liberal measures to restore and preserve our remaining forests is urgent and pressing. The prevention of injurious floods and subsequent periods of drouth, of untimely frosts and destructive winds, the abundance and purity of our water supply, the increase of insect enemies, the failure of crops from lack of moisture, are vital questions.

While we have been cutting down our forests most improvidently, developing a tree-destroying instinct, France, Germany and other countries of Europe have declared that trees must be protected by the State and have formulated into law the lessons taught by experience.

This experience shows that from one-fourth to one-third of any considerable area of any country should be occupied with trees, "and thus secure the best results in the productiveness of the soil and consequent ability to support a large and constantly increasing population."

Where stands Ohio in this respect? What is the ratio at present between the wooded and the cleared portions of this State?

While the statistics are not so complete as we might desire, it is safe to say that the proportion of timber land is not more than one-tenth of the total area.

New York, Pennsylvania and other States are awakening to a realization of the value of their forests. All civilized nations of Europe have long since enacted laws for the preservation of trees and for the re-establishment, in part, of the original area. Shall the great State of Ohio be blind to her future welfare? Shall we by short-sighted selfishness and negligence destroy this magnificent inheritance of soil and climate? Shall we devastate this fair commonwealth by flood and make it a desert by drouth? Shall we make our State a prey to tornadoes and cyclones, and see its fruitfulness blasted by frost and hail? Is there any crime against nature that draws down a more terrible curse than that of stripping the earth of all her forests? We do not object to the removal of forest trees after they attain their highest market value, nor do we expect the farmer to give up his most productive land to the raising of a crop of timber which must take fifty years or more to mature. All that the friends of the Ohio forests ask is that all the land that cannot be cultivated or is cultivated at a loss shall be set apart for timber-growing, and for every tree cut down at least two better trees shall be planted and reared until one-fourth of the area of the State is reclothed with trees. We are confident that a large majority of our farmers would improve their circumstances and increase their income by con-

centrating their efforts and applying their labor and fertilizers upon two-thirds of the area they now too often skim and skin, giving the residue back to timber-growing.

We know that Spain, Italy, portions of France and other countries of Europe have long suffered and are now suffering from the reckless improvidence that destroyed their forests. Shall we repeat and parallel by our own ignorance and selfishness the same mistake? Shall our noble country bear witness to a like recklessness and improvidence?

I do not wish to pose as an alarmist. I have little fear of an immediate timber famine. I do not believe that it has been fully demonstrated that the average annual rainfall has been materially lessened or its distribution greatly modified by the removal of our forests. But we do know that our soil rapidly loses in summer moisture, that our springs and wells are failing, our streams and rivers are more capricious in their flow, our drouths are more severe, and floods are more common.

We know that if all our hillsides and ridges, our ravines and rugged acclivities, our swamps and marshes were bounteously wooded once more, we should not have so many failing springs, dry streams and low rivers, injurious floods, destructive winds and killing frosts. We should have more birds to charm us with their song and aid us in our warfare against devastating insects. I believe we could keep more stock, produce more milk and meat, raise more grain and grass, more fine fruit and delicate garden vegetables on two-thirds of the land now used for this purpose, if the other third was covered with timber.

And this brings me to the point I wish to make, and that is the feasibility, nay, the urgent necessity of a more rational management of our forests, based upon careful investigation and exact experiment.

For this we need forestry experiment stations, similar to the agricultural experiment stations that are now so firmly established in this country.

To show how our best timber trees can be cheaply and successfully grown from seed and cuttings, to determine the best varieties for special soils and special purposes, the best methods of improving existing woodland, the best time to cut and the best way to preserve timber, and to answer various questions of like character, would be rendering a service of untold value to our State and country.

There are at the present time no less than a dozen forestry stations in France, Germany and Austria. Perhaps we have as good agricultural experiment stations as any in the world, but we have sadly neglected the art of forestry. European nations are not so short-sighted. In nearly every instance the forestry stations of Europe are connected with national universities or technical schools, and, having aided in developing a well-defined policy and practical methods of forest management, numerous forest academies and schools of forestry have been established.

During the past winter a bill was introduced into the Ohio State Legislature to provide for the establishment and equipment of a school of forestry. In my judgment the step was premature. As yet we have no well-defined system of forestry in this country, and the methods and practices of other countries are not applicable to our own.

Arboriculture is now taught at the Ohio State University and in several other educational institutions. Instruction is also given in the elements of forestry or rather in the general relations that forests bear to soil, climate, and other crops. I believe that these subjects should be taught in all our colleges and universities and might perhaps find an appropriate place in many of our public schools. I rejoice that not a mere school, but a College of Forestry has been established at my *alma mater*, Cornell University. I have no doubt that under the efficient direction of our energetic, enthusiastic, well-equipped Dr. Fernow it will accomplish much good and become a grand center of light, shedding its beneficent rays in every direc-

tion. I fear, however, that for some time to come it will be more of a forestral experiment station than a school or college of forestry. Speaking for Ohio, although her needs are greater than those of New York, a special school of forestry at this time would be a failure. I am old-fashioned enough to believe that the great essential need of a school or college is students. To my mind it is just as reasonable to expect a well-equipped saw-mill to perform its appointed function without logs, or to successfully run a flouring mill without wheat as to run a school or college without students.

Again, suppose the best possible four-years' course of teaching and training were given to any considerable number of students, what could they find to do after graduation? I believe that before technical training can be successfully given in any art or industry we must have the art or industry well established.

Just at this time much attention has been directed toward the "beet sugar" industry in the United States. In fact, this industry is likely to be firmly established, but until it is so established a technical school for instruction and training in this particular art or industry would be absurd. Schools for teaching something about which little or nothing is known are scarcely necessary.

When forestry stations and other means of investigation and experiment have developed an art and science of forestry applicable to our conditions, then we should have schools to teach this art and science. Till then the means and efforts expended for this purpose will, I greatly fear, be practically thrown away.

We need and should have in the State of Ohio a Forestry Station, for the purpose of developing a rational system of forestry adapted to the wants of Ohio, and such a station should be liberally supported by the State.

The object of this station should be to illustrate how best to conserve and improve existing woodland, to establish suitable nurseries and forest plantations for the common good, to encourage the production of wood as a farm crop, to exemplify the best methods of forest planting and management, to advance the cause of scientific and practical education in forestry and to make reports to the public annually of progress and results.

Trees are a great blessing to man. They charm by their grace and beauty; they comfort by their shade and companionship; they energize by their health-giving and inspiring influence. Our forests are the great laboratories of nature. They are the conservators of public health and public wealth. They are the most effective sanitary agents and are equally indispensable to commercial success. Let us save the forests.

Means Which a Forestry Association Can Employ to Advance Practical Forestry.

ALLAN CHAMBERLAIN.

The impression has long existed among a majority of the people in this country that forestry is nothing but a pretty theory cherished in the hearts of a few wholly impractical persons in the East. This notion has to a large extent been corrected and to-day we find State forestry associations from the Atlantic to the Pacific, and we find in their ranks, not as rare instances merely, lumbermen of a very practical turn of mind, and professional foresters trained in their sciences in the long-established schools of European countries. Forestry is fast gaining a footing in the United States as a practical science, and with the intelligent assistance of the forestry associations the entire country will at no distant date be won to the support of the cause.

Many of the associations now in the field find that the forest problem in their own States is practically non-existent, owing to the lack of standing forest of any magnitude, and they are somewhat at a loss to know in what direction to apply their energy. It will be my pur-

pose in this brief paper to offer a few suggestions which may perchance be of benefit to some of the forestry organizations of the country.

First of all I believe it to be the duty of every State association to support the national organization in the truly great work that it is doing for the introduction of the subject all over the country, and especially in relation to its fight for the governmental control of the Federal timber tracts. Had it not been for the persistent energy of the American Forestry Association during the last session of Congress the country would undoubtedly have lost several of the most valuable Government-owned timber regions in the West. Therefore it seems to me that every member of a State forestry association should become a member of the American Forestry Association.

All reforms come about slowly as we all know as individuals, but as organizations we are apt to lose sight of this truth. This fact should be brought to the attention of every newly organized forestry association. Before it can become an efficient working factor for the genuine good of the community it must learn how patience and well-ordered zeal can best travel in company.

Although, as has been said before, there is less antagonism to the promoters of applied forestry to-day than ever heretofore, yet there are persons in every community, whose general intelligence and position should mark them as certain friends of the work, who sneeringly thrust aside every advance along this line. It is easy to meet an honest opponent and endeavor to win him to your position on exhaustive argument. It is easy also to pass by for the time being the jeers of the unthoughtful person, for he will swing into line when the generals of his particular faction have been won. But to meet with calmness the cool indifference and obstinate deafness of intelligent individuals requires a head of more than ordinary equilibrium. This the new forestry association must seek to acquire, for to force such people into combat against their will only breeds a lasting hatred, whereas, in the long run, they will be at last captured through practical work of the organization, on which they may be depended upon to keep a quiet but ever-watchful eye.

Having thus sobered itself from any flights of imaginative theorizing a forestry association is prepared to invest its hard-working zeal in practical work.

Every enterprise, be it private business, charity, or a work for governmental reform, or anything else of consequence, requires first of all a set of brains equal to the task in hand, and secondly capital. A forestry association needs a membership composed of earnest men and women every one of whom is willing to *work* for the furtherance of the organization's objects. We find many people who are willing to become members of an association, but the majority seem to think that by paying their annual fees the work of reconstructing the world according to their ideals will go ahead at express-train speed. There must needs be many who cannot for various reasons give much time to association business, but there is no excuse for resident members absenting themselves regularly from meetings, and there is no reason why even absent members should not keep in touch with the association work by correspondence with the proper officers. It is my belief that forestry associations can do a great deal of good work through correspondence. Let every member be considering the problem of how the association can render the greatest service to the community, and take pains to make suggestions to the board of officers. It may be that comparatively few of these ideas will prove expedient, but this should not discourage those who are deeply interested. This I believe to be true association work, and that it will foster a greater amount of lively interest among the members than any other plan. The brains of an organization of this nature should not be regarded as lodged solely in the board of officers.

It is the duty of any association that

seeks to accomplish any radical reform to choose a board of officers which will command the respect and confidence of the public at large. The practical men of affairs and those who follow scientific callings which are kindred to the purposes of the organization are the ones we should choose for the responsible positions. And let me add that there are women in our forestry work to-day who can safely be given a hand in the management of affairs to the distinct advantage of the cause. Fortunately the friends of this movement are found in high stations of public trust, and it is not difficult for an association to secure the proper officers.

With such an equipment the necessary capital should be readily forthcoming, for people of means are always found who will help on a worthy cause if they have confidence in the leaders.

The vital question is how to best apply this capital. So important is this matter that I desire it to be fully understood that the suggestions I make for its application are one man's ideas and do not in any sense represent the policy of the Massachusetts Forestry Association.

For practical deeds in the field of forestry an association must be possessed of a large permanent fund, to be at all times kept conservatively invested, and its net income applied to special works. The routine expenses of the organization should not be charged to this account, but should be taken care of by the regular membership fees.

The association should establish its headquarters in the State capital or the chief commercial city of the State, and these officers should be centrally located and kept open during business hours regularly. Here should be the corresponding secretary and any assisting force necessary. This should be not only an office for the transaction of association business, but a bureau of information open to the public, and it should be the aim of the association to collect here a good library on forestry and arboriculture. The practical scope of this branch is almost illimitable.

The farmer seems to be to-day the man who needs first of all to be convinced as to the value of forestry methods in dealing with wood lots and unproductive land. While he is not really an enemy of the movement he is in truth skeptical, but not unreasonably so. He asks for practical demonstrations of the theory. His margin of profit in general agriculture is so narrow that he cannot afford to experiment on his own account in applying the theories of forestry, which, heretofore, has been all any one has offered him.

An association with capital can assist a few such earnest men. It may be that the farmer owns a few of the many acres of worthless cleared land to be found in all the older States. These lands are to-day a dead load on the farmer's hands as they are assessed for taxes and yet yield nothing, not even feed for sheep. Most of such lands are entirely suited to growing some form of commercially valuable wood. Being first thoroughly sure of the reliability of the farmer in the case, the association should employ a forestry expert to examine the conditions and determine just what it would be best to undertake, what growth the land is suited to, and show the farmer what it would be worth to him or to his estate in a given period of time. Should the owner decide then to proceed he should be called upon to sign some agreement to conduct this work for a given period—long enough to establish the plantation against wasteful loss. If desirable the contract might call for the furnishing of a certain amount of seed or seedlings by the association at the lowest wholesale market price, and the entire work should be done under the supervision of the professional furnished by the association. The farmer could pay for this work himself at the outset, or in installments if he so desired, or the contract could specify that the association should derive a certain percentage of the profits eventually accruing from the sale of the wood crop if marketed within so many years, or if not then harvested the owner to pay the original

bill and interest to the association. The association would possess a lien upon the plantation until the terms of the contract had been fulfilled.

Such a deal would make the association a silent partner in the plantation. Its continued interest in this piece of work would be assured, and occasional inspection made certain. This would be to the farmer's advantage and would give him greater courage to begin. It would also be to the advantage of the association as it would thus be adding to its invested capital while keeping it employed in a legitimate business.

It is not my idea that many such plantations should be undertaken. This, it will be understood, is merely practical missionary work such as the State of Massachusetts has been doing for the past few years with such excellent results in the way of encouraging better roads. These model plantations should be most carefully considered, and only one made in any given locality, perhaps we might say one to a county to start with.

There are other ways of applying missionary work, such as purchase by the association of woodlands sold for taxes. I should not consider it advisable for an association of this nature to purchase waste lands for planting solely on its own account, unless there was a very large surplus income waiting to be set at work. Even then I believe there are other equally practical ways in which it could be paid out, and which would be of greater value at present.

For instance, there appears to be a demand for good, practical hand-books on tree-planting and culture for the use of farmers. Such a work should be prepared by a forester of experience, and he should be one familiar with the natural conditions of State or region to be covered. Naturally, no single hand-book could be of service for all sections of the country, so there is a field here for almost all the State Associations. The idea is to have such hand-books published at the expense of the associations, the cost to be kept down to the lowest limit consistent with the character of the work, and the selling price fixed as close to cost as possible, in an effort to insure wide usage. Publishing is an expensive work at best, and it might be advisable and possible for the associations in a group of States having similar growths to undertake such a work together. For example, the New England States and New York State might join forces. I believe this could be managed without friction and with great success.

Legislation, of course, furnishes a constant field of activity for a forestry association. In many of the Eastern States there are laws, old and new, on the statute books relating in one way or another to this subject, which need culling and revision. Some are good in their way, others are more of an obstruction than an aid to advancement in this field of enterprise. Here is a good work for the associations. These laws should be carefully looked up, studied and intelligently revised, and the revisions urged before the legislatures. In this line, as in many others, we have too much legislation, and by simplifying the statutes referring to this subject much good should result.

This is not all that a forestry association can do for the advancement of practical work in its line. One might go on for pages with suggestions of one kind and another. But any live organization will find enough practical work, especially if it adopts the plan of keeping *all* its members in touch with its activity through the correspondence plan.

Address by R. W. Powell before the Brooklyn Ethical Association.

It has occurred to me within a few days that in most of the lectures of the present course, there does not appear to have been any earnest effort made to point out a way by which the difference between the individualists and the socialists might be reconciled. Now, in all business, politics, statesmanship, and in other practical associations of civilized life, there is a growing tendency toward

common action by those whose interests are mainly the same. To cite only such instances of this common action as will be universally admitted to be beyond criticism, it may be said that this tendency is manifested in business by the many different trade associations, which leave purely individual actions and interests unfettered, while affording great aid in matters where the welfare of all can be made the good of each; in the growing use of arbitration between nations; and even in the world of religious thought. But in many of the discussions which are taking place between different schools of philosophy, in regard to what is best for the common welfare, there is often shown a greater desire for polemical triumph than for true solution. But the situation is not without hope. A large sympathy for the socialistic ideals is felt even by those who have no sympathy for socialistic methods, and who are compelled to refuse to co-operate with such methods on the ground that all experience shows that they have always failed in the past, and are therefore quite sure to fail in the future. The whole science of life shows that all real progress is along the lines of growth and adaptation to conditions, and, therefore, all violent desires are liable to lead to reactions and fail in their ultimate objects. In this matter the individualists say to the socialists: "Yes, we know that the ultimate objects you strive for might be good *if* they could be realized. But your methods suppose a different order of men from what you yourselves have presented to us, or now anywhere exist, and, therefore, until the nature of man himself becomes more developed and more perfectly adapted to a true sociological life, we had better work along the lines of a slower and more healthy progress, and not run the risks of the violent changes which can only lead to disaster."

Now, it is of no use to criticise unless at the same time a better way can be shown. There has been an amount of energy expended in useless criticism which, if applied to possible ends, might have gone far toward putting some matters into right channels. The socialists have done much to arouse thought, but they have failed to show, in any reasonable way, how their desires can be obtained without the risk of inflicting still greater injustice than at present exists The individualists may also have too largely spent their force in pointing out the errors and inconsistencies of their opponents.

But let us see if a way cannot be suggested by which some of the ideals of the socialistic schools may be united with scientific methods, and common plans and work found in which all may join. An opportunity offers itself where disagreement has been the greatest. I refer to land ownership and administration, and the following suggestion may be worthy of respectful consideration.

The people of the United States, through the general government, are still the owners of nearly 1,000,000 square miles of land, exclusive of that in Alaska. This is all that is now left of the magnificent heritage once possessed in common by our people, and which has been so largely given away in a manner so foolish that it has added to the problems of government while decreasing the power of the people to solve them. But if the land still owned and held by the Government could at once be withdrawn from sale, the whole area might be reserved or nationalized, and plans matured for its proper administration. It would take considerable agitation to fairly initiate this work and repeal the present homestead and other similar laws. It would also take many years of patient trial to find the most effective ways of administering this vast property, but until the different socialistic schools have demonstrated by actual experience on a smaller scale the superiority of their methods, they have no right to still further agitate such great and sweeping changes, constitutional and other, in the laws and customs of the country as their theories call for.

The greater part of the 600,000,000 acres above spoken of will probably be

without practical value for many years to come, but there are still great undiscovered possibilities of wealth in the mineral lands, which might eventually be worked by convict labor as in some countries, or on the payment of royalties; and the 50,000,000 to 70,000,000 acres of forest land still in the possession of the general government should be immediately taken hold of in a serious way. There cannot possibly be any wise controversy in regard to this last matter. The future of our remaining forests is too important to be any longer neglected, and if the energy of the agitators of the land question could be enlisted in this cause, it would not take long to put matters in good shape. A successful administration of government forests, and of irrigation over considerable areas, would lead to Government supervision over private timber lands in such manner that the good of the people might be secured while private values were not impaired. If success was attained on this line, the experience gained would give better right to ask for still further changes, and such changes could then be made in a healthy way.

In the applications of the above plan the United States, and the separate States still holding unsold land, could make use of the experiences of France with her reforesting; of Holland with her reclamation of lands from the sea; of Denmark and France with their sand-dune problems; of Russia with her mines; of Italy with her struggles against malaria, and of India with her work in irrigation. There is nothing in the above plan which would conflict with any just private interests, and there is much in it which ought to appeal to the ideals of those who are dissatisfied with present conditions, while it will, at the same time, require all the experience and scientific knowledge of our people to make it successful.

By our lavish policy in the past we have thrown away many of our future possibilities, but it is never too late to wisely consider what is before us, and by taking hold of this problem in such manner as to make our own future more secure, we shall be doing good work for the whole world. But a large amount of constructive thought and energy must precede and prepare the way. Let us, therefore, ask whether less negative criticism and more affirmative appreciation are not now in order.

Report on the Forests of Sand Mountain.

CHARLES MOHR.

The part of the southwestern extension of the Cumberland tableland of Tennessee bordering on the northern side of the Tennessee Valley, and on the east upon Wills Valley, separating it from the Lookout Mountain range, is known as Sand Mountain. The southern and western limits of its tableland are not well defined, its broad expanse merging particularly toward the south with a gentle slope in the lower lands of the basin of the Warrior coal field. Thus defined, Sand Mountain comprises all the plateaux or "hill lands" of this great coal field drained by the Warrior River. Its mean elevation is little over 800 feet above the level of the sea, the mean annual temperature about 58° F., and the annual rainfall about 54 inches.* Bearing in general the character of a plain, the surface of this tableland is rendered by erosion undulating, and near the water courses often very rough and broken, furrowed by the numerous channels of the waters which have cut their way through the stratas of hard sandstones and conglomerates, the ledges of which form rocky and precipitous banks These sandstones and conglomerates of the lowest coal measures, underlaid and interstratified by argillaceous shales, form the maps of this mountain resting upon the subcarboniferous limestone, which in the deeper channels of erosion is found exposed above the water level. The soils resulting from the silicious strata forming to

*Warrior Coal Field, by Henry McCalley, in Geological Report of Alabama, 1886.

the largest extent the surface rock are of the character of light sandy loams, porous and of an ashy or pale yellowish color. Where the outcrops of the shales are prevailing the soil resulting from their disintegration is deeper, more retentive of moisture, of the nature of a heavier loam or ranking with the better class of clay soils.

The tableland of Sand Mountain is covered with an almost unbroken forest, fully four-fifths of its area remaining yet untouched by the axe. Closely investigated near its central position, throughout Cullman County, these forest lands in the nature of their tree-growth and timber resources can be taken as representative of the forests covering the tablelands of similar character which, in the northern section of Alabama, extend over nearly 3,000 square miles. These forests are rather open and present a varied growth of deciduous trees interspersed by the Shortleaved Pine and the Loblolly Pine. The largest part of their area is occupied by deciduous trees, among them the Oaks predominating, associated with Chestnut, Tulip trees, and more sparingly, Pignut and Mockernut Hickories and Black Gum. The Shortleaved Pine (*Pinus echinata*) is found more or less frequently scattered among the hardwood trees wherever a more sandy and drier soil prevails. The Loblolly Pine (*Pinus Taeda*) prefers a damp or wet soil and is found to form dense groves of heaviest timber growth in the depressions deficient of surface or under drainage. Confined to small areas from a fraction of an acre to several acres in extent (very rarely exceeding 10 acres) these detached swampy plots or swales contribute in no small degree to swell the percentage of merchantable pine timber found on these tablelands which, on closer investigation, appears to fall not short of fifty per cent of the whole of the merchantable timber standing.

By the prevailing sameness of surface and soil conditions these forests present in their general aspect no striking differences. Those caused by the ever-recurring variations in the nature of the soil, effecting within short distances the greater or lesser frequency or even the absence of the one or the other species among the bulk of the tree-growth, are not sufficiently marked to impart a peculiar feature to the general character of these forests. On the lands of poorest quality, with a shallow, light, sandy or gravelly soil, more or less broken, and subject to washing, the oaks of the Black Oak group (*Melobalani*), the Black Oak (*Quercus tinctoria*), Scarlet Oak (*Quercus coccinea*), known in this section under the name of Red Oak, and Spanish Oak (*Quercus faloata*) are predominating, the first named being the most abundant. The few Post Oaks and White Oaks associated with the Black Oaks are rarely of perfect growth, and the Shortleaved Pine is on the shallow, poor ridge, thinly scattered. Upon one acre located on the crest and partially on the somewhat steep declivity of one of these poor ridges 9 trees measuring above 15 inches breast high have been counted. Of these 2 were Black Oaks, 1 Scarlet Oak, 1 White Oak, 1 Hickory and 2 Shortleaved Pine, yielding in all about 3,000 feet of merchantable timber, of which the Pine furnished 10 per cent. Upon an acre plot of similar character located in a different direction 14 trees have been counted, among them 9 Black Oaks, 2 Scarlet Oaks, 1 Post Oak and 2 Shortleaved Pine, with a yield of merchantable timber estimated at 2,800 f. b m. of which 20 per cent were Pine. On a tract of slightly rolling to nearly level land with a soil of the same character but of greater depth, upon a two-acre plot 25 timber trees (measuring breast high over 15 inches in diameter and furnishing a log not below 12 feet in length, squaring at least 10 inches) were counted. Of this number 8 were Black Oak, 1 Scarlet Oak, 1 Spanish Oak, 1 Post Oak and 14 Shortleaved Pine. Of the merchantable timber furnished by these trees, estimated at 7,800 feet, 56 per cent were Pine, 30 per cent Black Oak, 10 per cent Scarlet and Spanish Oak and 3 per cent Post Oak. Similar

results have been obtained on the same class of lands in various directions, showing the absence or scarcity of Pine on the poor ridges with a shallow soil, and its gain upon the ground as the depth of the sandy soil increases. This happens to be most frequently the case on the gently rolling lands of the almost imperceptible slope toward the southern extremity of the tableland. There the Loblolly Pine commingle with the Short-leaved species, causing often a preponderancy over the hardwood timber.

With the improvement of soil conditions, the timber growth augments rapidly in quality and quantity. On the heavier loamy soils of greater fertility and retentiveness of moisture the Pine recedes before the hardwood trees.

The Tulip tree makes its appearance dispersed among the ever-prevailing Oak. The Black Oaks are giving more place to species of the White Oak group; the White Oak, the Post Oak and the Chestnut Oak (Mountain or Tanbark Oak, *Quercus prinus*), the latter prevailing on the undulating or broken ridges of greatest elevation and their declivities skirting the watercourses. On the well drained soil of their broader summits the Chestnut is most frequently found, with the Pignut and Mockernut Hickories of rarer occurrence. To indicate more particularly the nature of the timber resources of the forest growth found on this better class of lands, the following result of measurements made on defined areas (plots of one or two acres) are introduced, made in different directions on these tablelands in Cullman County. For example, on a two-acre plot about six miles northwest of Cullman, occupying mostly the rather steep slope (about 40°) of a broad ridge, 40 timber trees have been counted with a yield of merchantable timber estimated at 12,700 feet. In this number were included:

5	Post Oaks	1,740	— 13%
5	Mountain Oaks	1,544	— 12%
12	Scarlet Oaks	3,801	— 30%
13	Black Oaks	4,074	— 31%
2	Chestnut	400	— 3%
3	Tulip trees	1,266	— 10%

In the northwestern section of Cullman and the adjoining part of Winston County, on the broad ridges between the deep channels of the headwaters of the Lipsey fork of Warrior River, the prevailing stronger loamy soil supports a fine timber growth, mostly of hardwood trees with not less than from 6,000 feet to 9,000 feet and over of merchantable timber to the acre.

For instance, upon one acre selected on a gently rolling ridge of wide extent, 22 trees have been counted, none below 15 inches, and on the average 22 inches in diameter breast high, furnishing clear sticks from 12 to 36 feet in length (average 23 feet) which would make somewhat over 400 feet b. m. merchantable timber, each, or in the aggregate 9,000 to 9,500 f. b. m. to the acre. Among them were:

9	Mountain Oaks,	with	3 370	f. b	m. — 35%
3	White Oaks,	"	948	"	— 10%
1	Post Oak,	"	665	"	— 7%
4	Black Oaks,	"	1,640	"	— 17%
2	Spanish Oaks,	"	330	"	— 3%
3	Tulip trees	"	2,547	"	— 28%

Another acre in the same vicinity almost level, but well drained, furnished 25 trees equal to 9,200 feet b. m. of merchantable timber, of which 39 per cent were Black Oak, 30 per cent Poplar, 15 per cent White Oak, 10 per cent Post Oak, 3 per cent Chestnut, 3 per cent Spanish Oak. Other acres surveyed on the ridge furnished similar results, indicating clearly the influence of the configuration of the surface on the distribution of the Mountain Oak, which thus appears confined to the lands of a rather broken surface.

Six plots selected on these tablelands drained by the east fork of the Lipsey River, comprising seven acres located in various directions, and of different surface conditions from level, but well drained, to undulating and broken. On these were found 152 timber trees which in the aggregate would furnish 52,000 f. b. m. of merchantable timber, including 38 per cent Black Oak, 18 per cent Tulip tree, 12 per cent White Oak, 10 per cent Mountain Oak, 8 per cent Post Oak, 7

per cent Scarlet and Spanish Oak, 5 per cent Chestnut and 2 per cent Shortleaved Pine timber.

It has already been mentioned that the Loblolly Pine found on the tableland is principally confined to the swales which fill the depressions throughout the plateaux, most frequent on its southern slope. There it is found in fine proportions of growth crowded together to the exclusion of almost any other kind of tree, a few Black Gums excepted, which are chiefly confined to the outskirts of the shallow swamps. The trees vary from 20 to 36 inches in diameter, breast high, and furnish perfectly clear sticks on the average 40 feet in length, making about 800 feet of merchantable timber, or in the aggregate from 20,000 to over 25,000 feet to the acre. The Loblolly Pine found upon these swales contributes the larger part to the 50 per cent of Pine timber which can safely be assumed to constitute the timber growth of the tableland. The general résumé of the timber resources of the forest of Sand Mountain, based on the facts cited, will lead to the conclusion that the amount of merchantable timber of the different kinds mentioned will on the average not exceed 7,500 feet to the acre, after making due allowance for unsound timber or timber destroyed by hurricanes.

The forests covering the valleys opening upon the basin of the great coal field and the covers along the base of the northern and western escarpments of the plateaux present a great variety and luxuriance in their tree-growth. The Pine is entirely absent, and here and there on the bluffs replaced by the Red Cedar. In the fertile soil of the ridges of gentle ascent, and in the bottoms, the Tulip tree is found most frequent and in greatest perfection, with the White Oak, Cow Oak (*Quercus Michauxii*), White Ash, Linden, Wild Cherry, large Sweet or Red Gum, Black Walnut, Cucumber trees (*Magnolia acuminata*) and groves of Beech forming the high forest, with its density increased by numerous trees of smaller size, the Hornbeam (*Carpinus Americana, Michx.*), Ironwood (*Ostrya Virginica*), Dogwood, Large-leaved Magnolias (*M. macrophylla*), Plums, the Southern Crab Apple (*Pyrus augustifolia*), Shad trees (*Amelanchier*), various Hawthorns (*Cratægus spathulifolia, C. coccinea*) and Blackhaw (*Viburnum prunifolium*), the Snowdrop tree (*Halesia tetraptera*), are fringing their outskirts. The forests on these fertile soils have for the greatest part disappeared before the axe of the settler, and the remainder is rapidly melting away under its ever-increasing claims.

Lumbering interests on Sand Mountain: With the construction of the railroads intersecting these highlands, less than twenty years ago, the first sawmills of much capacity were erected along their lines. At present, the timber having been exhausted within hauling distance, numerous portable mills are scattered throughout the tableland to supply the needs of the settlements which have increased at a great rate during the past decade. Those located nearest the railroad ship their product to the next industrial center, while those more remote saw mostly on shares to the settlers hauling their own timber to the mill. The Pines furnish the largest part of the lumber product. No discrimination is needed between the Shortleaved Pine and the Loblolly Pine, either in the home market or in the lumber to be shipped. Poplar serves mostly for the production of hand-made shingles, the Black and Scarlet Oak timber sawn in two-inch planks is shipped to the mining districts, and finds otherwise local demand for fencing. White Oak and Post Oak of good quality and the required dimension is readily sold in district markets, however, on account of the expense of hauling, at present at little profit. Immense quantities of these kinds of timber are consumed in the making of cross-ties, leading to enormous waste, and resulting in the poorest remuneration. It is, however, constantly resorted to as the only way open to the farmer to realize, quickly, cash in the disposal of the timber on his land.

The lands in the part of the State un-

der consideration are wholly comprised within the limits of railroad grants. The alternate sections of public land in a great measure have been taken up by settlers mostly in parcels of smaller extent. Those held by the railroad corporations are rapidly passing under the control of large land companies and syndicates, with many sections in a similar way cut up. The topographical difficulties and the more formidable ones existing in the division of larger bodies of land in numerous parcels controlled by separate interests, are almost insurmountable obstacles to render the construction of well equipped temporary tramways practicable in order to make the timber resources of the plateaux available. In consequence the portable sawmill of small capacity will to that end be resorted to as long as the want of better facilities of transportation is not relieved by the opening of new railroad lines.

Prospects for the future of the forest: Notwithstanding the great natural advantages existing for the reproduction of the tree-growth on these highlands, under the present neglect and utter want of management to which they are exposed they cannot appear otherwise than doomed to destruction. Exposed from season to season to fire, the trees of younger growth are stunted and are found more or less diseased, destined to premature decay. The seedlings of the Pine are, if not entirely destroyed one year after another, rendered worthless, and those of the hardwood more apt to resist such disaster are as surely destroyed by all kinds of live stock, the swine especially devouring the mast, nipping in the bud all chances of reproduction of the more valuable Oaks and nut-bearing trees. Free from the influences of these agents of destruction the forest would exist perpetually, however greatly their features might be altered under the influence of the struggle for existence amongst the various species induced by natural agencies or by men in the wise utilization of their resources. After the sudden removal of the original hardwood growth, the Pine takes possession of the more silicious soils; the one or the other of the prevailing species according to its conditions of moisture. On the ridge lands of a shallower soil the Post, Black, Scarlet and Spanish Oak, with the Pignut and Bitternut Hickories are readily reproduced, all these trees offering considerable resistance to keep their own against adverse influences, by the tenacity of their root stocks (stools) and their lasting tendency to reproduce new stems. The hardwood trees thriving best upon a more generous soil, White Oak, Post Oak, Mountain Oak, Chestnut and Mockernut Hickory, would readily reproduce themselves, the Mountain Oak, as valuable for its bark as it is for timber, being most apt to keep its ground in the more broken situations on account of its reproduction by sprouts from the stump.

For the forester a field can scarcely be found to offer better advantages for the maintenance of the forest and the reproduction of the most valuable kinds of timber indigenous to our country placed under his control.

In July, 1897, this Association invited competitive designs for a corporate seal. A jury of award was named, to whom the drawings would be submitted. It was announced that each juror would "return a written report designating the designs that have merit and the ten that have superior merit. From the last mentioned class the Executive Committee of the American Forestry Association will select one design for execution. This design will be retained as the property of the Association, and to its author will be paid the sum of one hundred dollars ($100)."

The jury consisted of Mr. Albert Pissis, of San Francisco; Mr. Henry Van Brunt, of Kansas City; Mr. Halsey C. Ives, of St. Louis; Mr. J. H. Gest,

of Cincinnati, and Mr. Herbert Adams, of New York City. Mr. Adams was substituted for Mr. St. Gaudens, at the suggestion of the latter, because of Mr. St. Gaudens' absence from the country.

The jury was selected with great care, and was composed of most capable gentlemen.

Eighty-nine designs were received by the Association, accompanied by sealed envelopes containing the names of the authors.

These designs, without the names of authors, were sent to each of the jurors in succession.

The jurors have reported thirty-two designs that have merit, but they are almost unanimous in stating that none of the designs have superior merit.

One juror writes: "I am sadly disappointed in the character of the designs submitted. With but few exceptions, they show a want of appreciation of the qualities to be considered in the designing of a seal. These qualities, in my judgment, require it to be epigraphic, conventional and symmetrical—heraldic in fact, without embarrassing details. It should certainly not be pictorial, and should not attempt to say too much. It should also be capable of reduction without loss of character. Most of the designs, including some of considerable poetic feeling, cannot submit to this last test without becoming tangled and obscure."

Another selects ten designs, but says: "I do not think any of them first rate, and I am constrained to designate those having the fewest faults."

Another selects ten designs "as being worthy of coming under the head of those possessing merit," but adds: "I regret to say that I do not find any among those submitted that are entitled to be considered as having superior merit. The collection of designs, taken as a whole, is far below the standard that should be attained in such a competition if entered into by the qualified designers of our country."

Another writes: "It is regretted that no design among those shown seems quite of the first order of merit, such as might reasonably be expected."

Among the thirty-two designs designated by the jurors but six have received three votes and but two have received five votes, and only one of this five is put among the best.

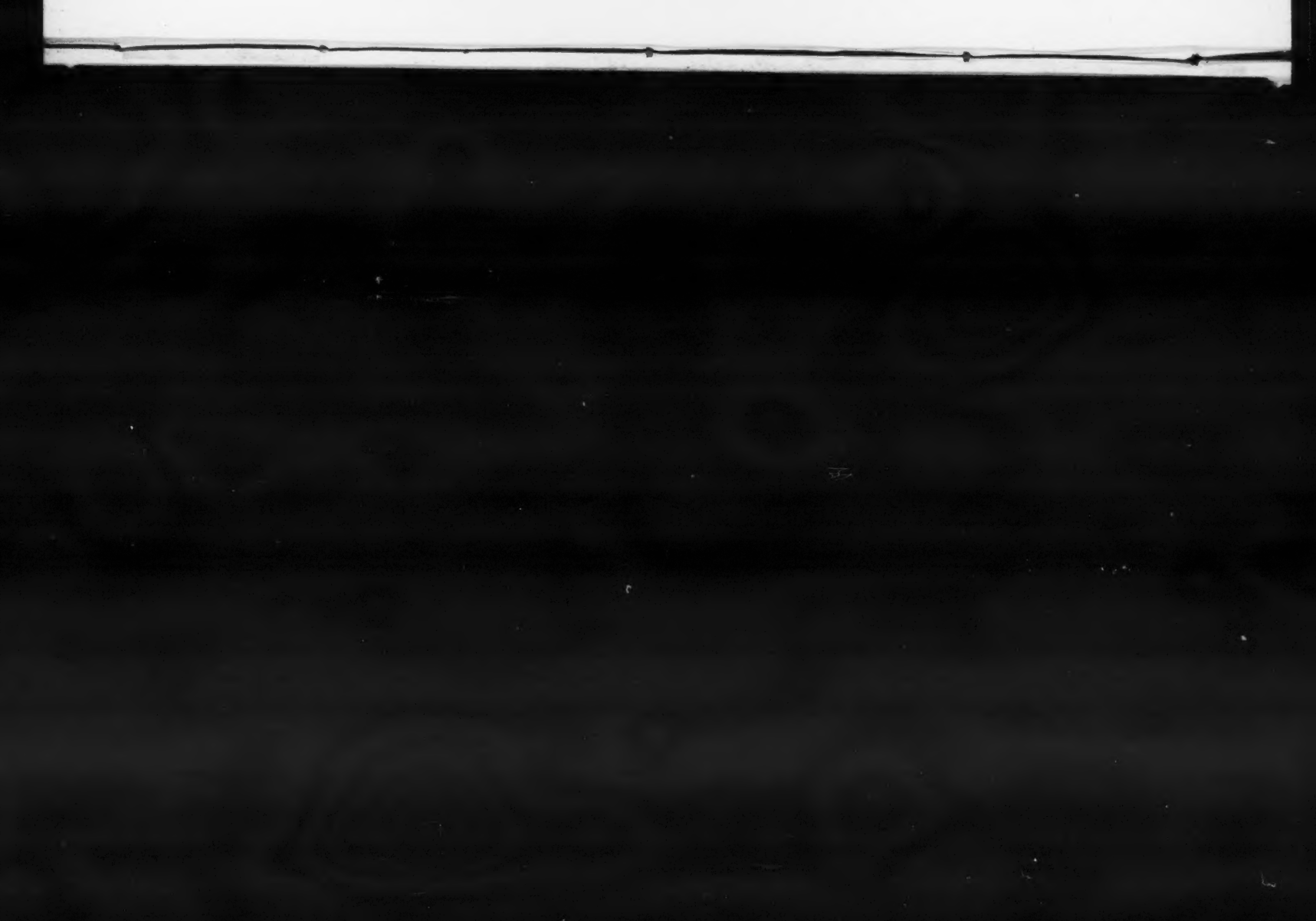
It would seem, therefore, that the competition has failed to bring before the committee a number of designs selected by a jury as having superior merit, from which to select one design for execution.

The Executive Committee has therefore decided not to award the prize of $100 to any of the competitors.

It is greatly regretted that there was not a larger number of designs submitted, and that those sent in did not meet the requirements.

The Committee extends its sincere thanks to the competitors for the interest they have shown, and hopes that it may lead to a more intimate knowledge of the aims and accomplishments of The American Forestry Association.

The President has signed an order altering the boundaries and area of the Black Hills forest reserve in South Dakota. A portion of the reserve was unsuited for timber growing, and this has been excluded and a large tract entending into Wyoming, 443,000 acres, has been added to the reserve. This action was taken at the solicitation of the people living in the vicinity of the reserve.



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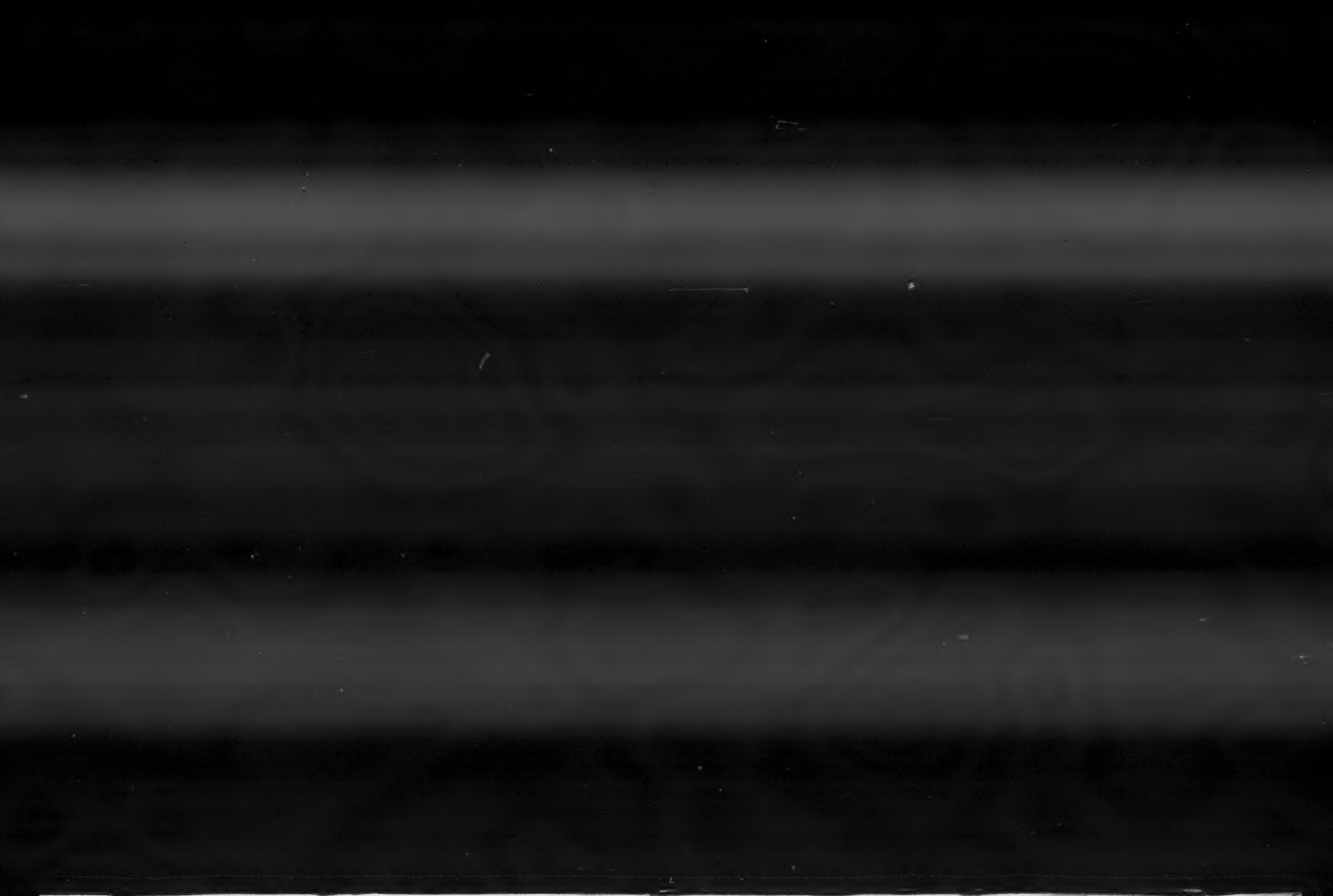
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